REMARKS

I. Status of the Claims.

Claims 1-53 are pending in this application. Claims 15-19 and 32-52 have been withdrawn from consideration as being directed to a non-elected invention. Claim 1 has been amended to more particularly point out and distinctly claim the invention. Support for these amendments can be found, for example, in the specification at page 17, lines 17-25; page 20, lines 2-5 and page 30, lines 5-7 for the features that the porous formed article comprises fibrils that form a three-dimensional network structure. The recited feature of a gap between said fibrils becomes a communicating pore is described at page 21, lines 5-10 of the specification, for example. The recited feature that the fibrils have cavities in the interior of each of said fibrils itself is described at page 17, lines 23-25; page 19, lines 9-11 and page 30, lines 5-10 of the specification, for example. No new matter has been introduced by these amendments.

II. Rejections Under 35 U.S.C. § 103(a).

Claims 1-3, 5, 6, 8-14, 20 and 53 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Motoya et al. (JP 09-187646) in view of Omori et al. (U.S. Patent No. 6,689,465). Motoya is said to meet the limitations of claim 1 except that it fails to explicitly disclose that the article is porous and has inorganic ion forming material supported on the surface of the inner cavities. The Examiner apparently considers Omori to teach (Abstract, Fig. 13, col. 4, lines 52-57) a porous bead having cavities in the interior of a fibril forming a communicating pore, at least a part of said cavities are open at the surface of the fibril. Applicants disagree that Omori (a patent disclosure of

one of the same inventors and the same Assignee as the invention claimed in this application) contains the teaching attributed to it by the Examiner.

The present invention relates to a porous formed article in which fibrils comprising an organic polymer resin and an inorganic ion absorbing material become a skeleton and form a three-dimensional network structure. A communicating pore connects from the inside of the porous formed article to the outer surface of the same. This communicating pore is formed by a gap between said fibrils which form the skeleton of the three-dimensional network structure.

In addition to the above structure, the porous formed article of the present invention is further characterized in that the fibrils, i.e., the skeleton forming the three-dimensional network structure in the porous formed article, have cavities in the interior of each of said fibrils itself. The fibril itself is a porous material. As noted on page 20, lines 2-5, a fibril refers to a fibrous structure. In other words, in the porous formed article of the present invention, a communicating pore is formed by a gap between said fibrils which form the skeleton of three-dimensional network structure, and also the skeleton itself (i.e., the fibril itself) has cavities inside.

Attached hereto are referential drawings to explain the structure of the porous formed structure of the present invention. Fig. 7 is a scanning electron micrograph (magnification: x130) of a cross-section of the porous formed article that was obtained in Example 2 of the specification. Fig. 8 is a scanning electron micrograph (magnification: x10,000) of an outer surface of the porous formed article that was obtained in Example 2 of the specification. Fig. 1 is a scanning electron micrograph

(magnification: x5,000) of an inside of the porous formed article that was obtained in Example 2 of the specification.

In Fig. 1, it can be seen that communicating pores are formed by gaps between the fibrils forming the skeleton. In Fig. 8, it can be seen that the communicating pores are formed by gaps between fibrils and open at the outer surface of the porous formed article. In Fig. 1, it can be seen that the porous formed article of the present invention has cavities in the interior of each of fibrils (i.e., in the interior of the skeleton).

Due to the above particular structure, the inorganic ion absorbing material can be embedded not only into the surface of a fibril itself that is a part of the skeleton forming the three dimensional network structure but also onto the surface of cavities in the interior of the fibril itself. Therefore, the porous formed article of the present invention has a very high efficiency of contact with an object substance to be absorbed.

The porous formed articles of Motoya and Omori, in contrast, do not have cavities in the interior of the fibril itself as a skeleton. Motoya discloses an ion absorbing material in paragraph 0009, in which the ion absorbing material is attached to a three-dimensional network structure by use of a binder. There is no disclosure in Motoya that the skeleton forming the three dimensional network structure itself has cavities. As more fully explained below, there is nothing in the Motoya disclosure that would suggest that cavities in the network structure itself would inherently flow from the materials and procedures used in Motoya to form a three-dimensional network structure.

Similarly, Omori discloses porous beads in which the fibrils containing an organic polymer resin become a skeleton and form a three-dimensional network structure where communicating pores are formed by gaps between fibrils. However, contrary to the

Examiner's observation, it is clear from the electron micrograph of Fig. 13 of Omori that the porous beads do not have cavities in the interior of the fibril skeleton itself. One of ordinary skill in the art would not have achieved the porous formed article of the present invention even by combining the teachings of Motoya and Omori since neither reference, either alone or in combination, teaches a structure or method of making a structure of the claimed invention where the three-dimensional network structure has not only communicating pores as gaps between fibrils forming a skeleton, but also cavities in the interior of each of the fibrils.

The process of making the porous formed article of the present invention differs from the procedures described in Motoya and Omori, so it is unreasonable to assume or predict that a structure according to the claimed invention would be produced by following the teachings of Motoya and/or Omori. In the present invention, a water-soluble polymer is added in the step of producing a porous formed article by coagulating an organic polymer resin with a poor solvent (see Example 1 starting at page 71, line 26 of the specification). No water-soluble polymer is used in the corresponding step of Motoya or Omori. Due to this difference, the porous formed articles of Motoya and Omori do not have a structure characterized by cavities formed in the interior of a fibril forming the skeleton itself.

The reasons that cavities will not be formed inside the fibrils can be explained as follows: First, the structure of the present invention is formed by mixing an organic polymer resin, a good solvent for the resin, an inorganic ion absorbing material and a water-soluble polymer to prepare a solution and allowing coagulation to occur with a poor solvent (paragraph 0016 starting on page 30, line 15 of the specification). The

water-soluble polymer in the solution containing the organic polymer resin enters and is dispersed into the organic polymer resin. Then, the water-soluble polymer dissolves out into the poor solvent in the course of phase separation of the organic polymer resin in the poor solvent, so that the interior of a fibril also has cavities (paragraph 0010 starting at page 20, line 25 of the specification). Thus, the porous formed article of the claimed invention is produced.

Motoya does not add any water-soluble polymer in the step of preparing a three dimensional network structure. Although Motoya mentions examples of water-soluble polymers, it merely refers to them as examples of binders to attach the absorbing material to the previously formed three-dimensional network structure. Omori does not add any water-soluble polymer in the step of producing porous beads. Thus, since no water-soluble polymer is used in the step of producing porous formed articles in Motoya and Omori, a structure that a fibril as the skeleton of a three-dimensional network structure has cavities in the interior of the fibril itself cannot be produced.

The claimed invention results in inorganic ion absorbing material being supported both on the surface of the fibril and in cavities in the interior of the fibril. This does not occur according to the teachings of Motoya and Omori.

In the present invention, the inorganic ion absorbing material is supported in the cavities in the interior of a fibril itself in addition to on the surface of the fibril. According to the method of attaching the absorbing material of Motoya, however, it cannot be supported in the cavities in the interior of a fibril though it can be supported onto the surface of the fibril. This is explained below in view of the production method.

Motoya describes attaching a binder and an absorbing material to each other by an impregnation method, dropping method and spray method as a method of attaching the absorbing material to the three dimensional network structure. This clearly means that the absorbing material can only be attached to the surface of the skeleton fibril using a binder. Similarly, even if Omori is combined with Motoya, the inorganic ion absorbing material can be only supported onto the surface of the fibril itself and not be supported in cavities in the interior of the fibril as required in the claimed invention.

The Examiner has argued (page 6 of the Office action), incorrectly, that applicant has not provided a clear definition of a fibril, so it is being considered to be a fine fiber or filament, and then interprets a fibril to be a protrusion on the surface of the absorbent article. Applicants point out that the specification states that a fibril refers to a fibrous structure that forms a three-dimensionally continuous network structure on the outer surface and the inside of the formed article (page 20, lines 2-5 of the present specification). The specification also describes and exemplifies a method of forming this fibrous structure. Terms in a claim are interpreted in light of the specification disclosure. MPEP 2111.01 and 2173.02. Accordingly, the examiner should interpret the term fibril consistent with the description in the present specification.

For all the reasons discussed above, neither Motoya nor Omori, either alone or in combination, make out a prima facie case of obviousness of the claimed invention. Accordingly, this rejection should be withdrawn.

Claim 4 has been rejected under 35 U.S.C. § 103 as being unpatentable over Motoya in view of Omori and Chang et al. (U.S. Patent No. 5,418,284).

Claim 7 has been rejected under 35 U.S.C. § 103 as being unpatentable over Motoya in view of Omori and Cheremisnioff.

Claims 21-31 have been rejected under 35 U.S.C. § 103 as being unpatentable over Motoya in view of Omori and further in view of Kazuhiko (JP 2003-305458).

These rejections should be withdrawn for at least the same reasons discussed above with respect to claim 1. None of the additional references relied on in these rejections provide any reason or motivation to modify the teachings of Motoya and/or Omori in such a way that would produce a porous formed article according to the claimed invention having fibrils forming a three-dimensional network structure that contains both a gap between fibrils forming a communicating pore, and cavities in the interior of each fibril itself.

III. Conclusion

Applicants respectfully request that the Examiner withdraw the rejections of each of claims 1-14, 20-31, and 53 under 35 U.S.C. § 103.

Prompt and favorable reconsideration is requested.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: Charles E. Van Horn
Charles E. Van Horn
Reg. No. 40,266

Attachment: Referential Drawings